Unit 2
Day 3
Section 1.7
Addition and Subtraction of Radicals

(5) $\sqrt[3]{\sqrt{4}} = \left((4)^{1/2}\right)^{1/3} = \left((2^2)^{1/2}\right)^{1/3} = 2^{1/3}$

$\sqrt[3]{\sqrt{4}} = \sqrt[3]{2}$

$\sqrt[3]{2}$

$$\sqrt[4]{\sqrt[3]{2}} = \left(2^{1/3}\right)^{1/4} = 2^{1/12} = \sqrt[12]{2}$$

(b) $\dfrac{\sqrt[4]{rs^2t^3}\cdot\sqrt[4]{r^3s^2t}}{\sqrt[4]{r^2t^3}} = \dfrac{\sqrt[4]{r^4s^4t^4}}{\sqrt[4]{r^2t^3}} = \sqrt[4]{r^2s^4t}$

$s\sqrt[4]{r^2t}$

$\dfrac{rst}{\sqrt[4]{r^2t^3}}$

(35) $\sqrt[3]{16(-2)^4(2)^8} = \sqrt[3]{(2)^4(2)^4(2)^8} = \sqrt[3]{2^{16}}$

$= 2^5\sqrt[3]{2}$

$32\sqrt[3]{2}$

1)

$$\sqrt[4]{80} - 4\sqrt[4]{405} + 2\sqrt[4]{5}$$

$\sqrt[4]{2^4 \cdot 5} - 4\sqrt[4]{3^4 \cdot 5} + 2\sqrt[4]{5}$

$2\sqrt[4]{5} - 12\sqrt[4]{5} + 2\sqrt[4]{5}$

$-8\sqrt[4]{5}$

2)

$$\frac{1}{\sqrt[3]{16}} + \frac{-3}{\sqrt[3]{128}} - \frac{4}{\sqrt[3]{250}} = \frac{1}{\sqrt[3]{2^4}} + \frac{-3}{\sqrt[3]{2^7}} + \frac{-4}{\sqrt[3]{5^3 \cdot 2}}$$

$$\left[\frac{1}{2\sqrt[3]{2}}\right]\frac{10}{10} + \left[\frac{-3}{4\sqrt[3]{2}}\right]\frac{5}{5} + \left[\frac{-4}{5\sqrt[3]{2}}\right]\frac{4}{4}$$

$$\frac{10}{20\sqrt[3]{2}} + \frac{-15}{20\sqrt[3]{2}} + \frac{-16}{20\sqrt[3]{2}} = \frac{-21}{20\sqrt[3]{2}} \cdot \frac{\sqrt[3]{4}}{\sqrt[3]{4}} = -\frac{21\sqrt[3]{4}}{40}$$

3)

$$\left(\sqrt{6}-\sqrt{3}\right)\left(\sqrt{6}+\sqrt{3}\right)$$

$6-3$

3

4) $\left(\sqrt[3]{5}-2\right)\left(\sqrt[3]{5^2}+2\sqrt[3]{5}+4\right)$

$\sqrt[3]{5^3}+2\sqrt[3]{5^2}+4\sqrt[3]{5}-2\sqrt[3]{5^2}-4\sqrt[3]{5}-8$

$5-8$

-3

5) $\left(2\sqrt{5}-\sqrt{2}\right)\left(5\sqrt{2}+\sqrt{5}\right)$

$10\sqrt{10}+10-10-\sqrt{10}$

$9\sqrt{10}$

Method 1

$a^2 b^2 = (ab)^2$

6) $\left(\sqrt{3}-\sqrt{2}\right)^2\left(\sqrt{3}+\sqrt{2}\right)^2$

$\left[\left(\sqrt{3}-\sqrt{2}\right)\left(\sqrt{3}+\sqrt{2}\right)\right]^2$

$(3-2)^2$

$(1)^2 = 1$

6)

Method 2

$$\left(\sqrt{3}-\sqrt{2}\right)^2\left(\sqrt{3}+\sqrt{2}\right)^2$$

$(5-2)^2 = 9$

~~25~~ $-4 \neq 21$

$(\sqrt{3}-\sqrt{2})(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})(\sqrt{3}+\sqrt{2})$

$(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{2})(\sqrt{3}-\sqrt{2})(\sqrt{3}+\sqrt{3})$

$(3-2)$ $\cdot$ $(3-2)$

(1) $(1) = 1$

Homework:

Day 3